

**I/Q MODULATION SYSTEMS AND METHODS THAT USE SEPARATE
PHASE AND AMPLITUDE SIGNAL PATHS AND PERFORM
MODULATION WITHIN A PHASE LOCKED LOOP**

Abstract of the Disclosure

A digital signal processor generates in-phase, quadrature-phase and amplitude signals from a baseband signal. A modulator modulates the in-phase and quadrature-phase signals to produce a modulated signal. A phase locked loop is responsive to the modulated signal. The phase locked loop includes a controlled oscillator having a controlled oscillator input. An amplifier includes a signal input, amplitude control input and an output. The signal input is responsive to the controlled oscillator output and the amplitude control input is responsive to the amplitude signal. The phase locked loop that is responsive to the modulated signal includes a controlled oscillator output and a feedback loop between the controlled oscillator input and the controlled oscillator output. The feedback loop includes a mixer that is responsive to a local oscillator. The modulator may be placed in the phase locked loop. In particular, the modulator may be placed in the feedback loop between the controlled oscillator output and the mixer, between the local oscillator and the mixer, or between the mixer and the controlled oscillator input.